

# FREMONT POLICE DEPARTMENT

## ELECTRIC VEHICLE PILOT PROGRAM



## THE PROGRAM

In an effort to improve efficiency, Fremont Police has transitioned part of its fleet from gas-powered vehicles to hybrid vehicles. Since 2009, the department began using Toyota Prius and Ford Fusion hybrid vehicles. Fremont Police is now deploying its first fully electric-powered vehicle (EV) as part of its patrol fleet. The following criteria were used in selecting the pilot EV:

- Does the technology meet police application?
- Is the EV durable enough for police usage?
- Is the EV cost effective?

## THE VEHICLE

- 2014 Tesla Model S 85
- 85 kWh Battery
- 265 miles range (EPA)
- 5.4 seconds 0-60 mph
- Mileage when acquired: 26,471
- Selling Price: \$55,800
- Total Cost inc. tax & fees: \$61,478.50
- Purchase Date: Dec 2017
- Possession Date: Jan 2018

## THE MODIFICATIONS

- Overhead light-bar
- Rear flashers
- Wheel well lights
- Headlight flashers
- WatchGuard vehicle camera
- Trunk lighting
- Panasonic mobile digital computer
- Push-bumper
- Prisoner partition
- Prisoner seat
- Center equipment console
- Armor door panels for driver & passenger doors



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### LIFE CYCLE COMPARISON (@90,000 MILES/5 YEARS)

	2014 TESLA Model S 85	GAS FORD PPV
OEM Combined MPGe/MPG	89 (88-90)	18.5 (16-21)
OEM Range	265 (85kWh battery)	344 (18.6 tank cap)
Energy/Fuel Cost	\$0.15 kWh	\$3.00 per gallon (G)
5 YR Energy/Fuel Cost (est)	\$4,320	\$32,297
5 YR Maint/Repair Cost	\$3,900	\$15,577
Vehicle Cost	\$61,478.50	\$40,500
Cost per mile - Maint/Fuel/Purchase	\$0.77	\$0.98
Energy/Fuel cost per 100 miles	32kWh=\$4.80 (@\$0.15/kWh)	12G = \$36.00 (@\$3.00/G)
CO2 Emissions - 5 YRS/90k	0 lbs CO2	210,994 lbs CO2



### WHAT'S NEXT

- Under normal driving conditions, EV appears to meet patrol performance requirements, realized cost savings as compared to a conventional patrol, and is eco-friendly with little to no carbon footprint. EV has far less moving parts which significantly reduces maintenance, labor, downtime, and cost.

#### Under severe police duty, the pilot test will determine if:

- The EV performs as intended
- Vehicle & components prove to be durable
- Range >= to 100 miles (per 11 hour shift)

Final results and data analysis will determine if the EV technology meets patrolling applications and actual cost effectiveness.

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### SUSTAINABILITY GOALS

- The City's General Plan vision is for Fremont to serve as a national model of how an auto-oriented suburb can evolve into a sustainable, strategically urban, modern city.
- Since 2012, the City has been working to implement its **Climate Action Plan** goal of achieving 25% greenhouse gas emission reductions from a 2005 baseline by the year 2020. The City is now updating this plan beyond 2020, and has recently adopted a **Carbon Neutral Goal** for the year 2045. **Electrification of the transportation sector, supported by clean and renewable power, is a major strategy for meeting this zero emissions goal.**
- In support of this Citywide sustainability initiative, Fremont Police is deploying its first fully electric-powered vehicle, a 2014 Tesla Model S 85, as part of its patrol fleet. **The electric vehicle will officially begin patrolling the streets of Fremont this month (March 2019).**
- The City's Robert Wasserman Police Complex has **872 kW** of solar carport structures installed onsite, providing clean and renewable electricity to the facility and to the electric vehicle as well as saving the City money on its electricity and vehicle operation bills.
- With all of Fremont's electricity supply coming from either onsite renewable solar power or 100% carbon-free grid based electricity through East Bay Community Energy (EBCE), **each police vehicle that is replaced with an EV will completely zero out the greenhouse gas emissions associated with that vehicle's operation.**
- Considering that each gallon of gasoline burned produces 19.6 pounds of carbon dioxide, one gas-powered Ford Police Patrol vehicle is responsible for approximately 42,000 pounds of carbon dioxide emissions annually, which is a little more than 210,994 pounds of carbon dioxide over the course of 5 years. A 2014 Tesla Model S 85 will have zero carbon footprint. **This is a 100% reduction in CO2 emission, eliminating 210,994 pounds of CO2 emission over the lifetime of a police vehicle.**
- The estimated energy or fuel cost per 100 miles is \$5.70 for the Tesla and \$36 for the gas Ford patrol vehicle, a difference of \$30 per 100 miles driven. **This is an 84% reduction in fuel cost.**
- In addition to fuel savings, electric vehicles also have far less moving parts which significantly reduces maintenance, labor, downtime, and cost.
- Over the course of the year, we will collect data from the Tesla, to include actual mileage per charge, maintenance cost, downtime, etc. A comprehensive data analysis will be conducted to determine if the EV technology meets severe police duty application and the actual cost effectiveness.



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### INITIAL PRESS RELEASE - JANUARY 23, 2019

#### **Fremont Police Department to Deploy Its First U.S. Zero-emission Tesla Patrol Vehicle in Pilot Program**

FREMONT, Calif. - January 23, 2019 — The Fremont Police Department will soon begin a pilot program to test a TESLA Model S 85 electric vehicle customized for patrol operations in alignment with the City of Fremont's goal to reduce greenhouse gas emissions by 25 percent from its 2005 baseline through economically practical strategies by the year 2020.

In 2017, the City formed a team comprising staff from the Police, Finance, Engineering, Information Technology, Building Maintenance, Fleet, Community Development, and Public Works Departments to study the feasibility of deploying a zero-emission vehicle for police field operations.

"The electric patrol vehicle pilot program is an extension of the City's clean technology and smart city initiatives to help make Fremont a more sustainable community," said Fremont Police Captain Sean Washington. "Given that Fremont Police vehicle fleet is responsible for a total of 980 metric tons of carbon dioxide emissions annually, this program has the potential to eliminate 10 percent of all municipal greenhouse gas emissions."

The pilot team purchased a used 2014 TESLA Model S 85 in January 2018 for \$61,478.50 (including taxes and fees) to replace a 2007 Dodge Charger which was scheduled to be taken out of service due to age. The Tesla is the only electric vehicle that met specifications for size, performance, battery range, and safety, all required for a fully deployable patrol vehicle. Tesla electric vehicles are manufactured locally in Fremont.

Since purchasing the vehicle, the Police Department has been working with vendors to install the standard police equipment such as the light bar, push bumper, and ballistic barriers. The total invoiced costs for modifications to date are \$4,447 and are expected to increase as final invoices come in. In comparison, a Ford Explorer with the police package costs approximately \$40,000 with additional modification costs that are comparable to the Tesla. The initial buildup cost of the Tesla is slightly higher than that of a Ford due to the necessary customizations.

In addition, the cost of gas over a five-year period for the police Ford Explorer is approximately \$32,000, and maintenance is estimated at \$15,000. While the average life cycle of a police vehicle is approximately five years, electric vehicles may be operational for longer due to less mechanical issues.

To support plug-in vehicles, the City's Police Complex has 872 kW of solar carport structures installed onsite and three charging stations. The electricity supply coming from the Police Department's renewable solar power structure means that each Police fleet vehicle replaced with an electric vehicle will completely zero out the greenhouse gas emissions associated with that vehicle's operation.

The City's pilot program team will monitor performance, durability, range, costs, and unknowns that will only be fully understood once the pilot test is completed and the results are evaluated. Once the vehicle is fully operational and deployed on patrol, the City will share more photos and information after the deployment and give our community the opportunity to get an up-close view of the vehicle. For more information about the Tesla pilot project, visit [www.fremontpolice.org/ElectricVehicle](http://www.fremontpolice.org/ElectricVehicle).

**[WWW.FREMONTPOLICE.ORG/ELECTRICVEHICLE](http://WWW.FREMONTPOLICE.ORG/ELECTRICVEHICLE)**

